ORIGINAL ARTICLE

Soft tissue neck lumps in rugby union players

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Dorsal neck masses are well recognised in front row rugby union players. Previously undescribed in the medical literature, they may present in the primary or secondary care setting when they become symptomatic. Often misdiagnosed as lipomata, they may in fact be fibrous and deeply connected, with the consequences of embarking on surgery subsequently underestimated. This paper describes an epidemiological study using the rugby union media and gives key points for healthcare professionals involved in the management of such masses.

Rugby union is a sport that has a perceived association with neck injuries, both acutely and in the longer term.¹ Commonly involved are front row players, classically injured at the time of scrum collapse. Previously undescribed, however, are the widely recognised soft tissue masses on the back of the neck of front row players, colloquially known as the “prop’s hump”. Known in France as a “bouffe”, it is regarded as a badge of honour among players, but its prevalence, aetiology, management, and sequelae have not been documented. This paper describes an index case, its operative management, and the subsequent involvement of the rugby union media to assist in an epidemiological survey of players throughout Britain.

CASE PRESENTATION

A 30 year old amateur loose head prop presented to a consultant general surgeon with a history of several years duration of a slowly enlarging soft tissue mass overlying the spinous process of the seventh cervical vertebra. The mass became inflamed after rugby matches through friction in the scrum and occasionally ulcerated. This was usually more common at the start of each new season and slowly settled as the season progressed. He sought attention because of the size of the mass, which was becoming increasingly unsightly.

On examination, a 7 cm by 5 cm smooth, uninflamed, non-tender, fluctuant mass was found at the base of the dorsum of the neck which was not attached to skin or deeper structures. Clinically this appeared to be a lipoma, and the patient was listed for surgical excision. At operation, however, the mass was found to consist of dense fibrous tissue which extended to the vertebra. Excision would have involved extensive skin grafting to close the subsequent defect and precluded any continuation of the patient’s rugby career; consequently the procedure was abandoned.

The misdiagnosis of the mass raised understandable questions. A Medline search revealed no references to such neck masses. With the patient’s consent, clinical pictures (figs 1 and 2) were printed in the *Rugby World* magazine (May 2005) along with a brief clinical synopsis. A request was made to readers to contact the author with details of players with similar lumps, with particular reference to their playing position, standard to which played, duration of playing career, age at onset, symptoms, investigations, and management. The patient consented to publication of his details.

RESULTS

Thirty one players responded to the article. The most striking finding was the preponderance of loose head props, with 30 of the 31 having played exclusively or mostly in this position. The other position involved was tight head prop. The mean age at onset of the mass was 26 years (range 19–42) after a playing career of 13 years (7–30). The mean height of the affected players was 180 cm (range 168–188), and most (74%) played their rugby at a level below national league standard. This represents an appropriate cross section of the rugby playing community.

Nine players had sought surgical attention because of concerns about their neck mass. Reasons given for this included aesthetics, concerns about rapid growth or ulceration, exacerbation of stoop, and difficulty turning the head

Figure 1 Neck lump: lateral view. The patient has consented to the publication of this picture.

Figure 2 Neck lump: oblique view. The patient has consented to the publication of this picture.

Table 1 Key points for clinicians

Diagnosis	May be lipoma or fibroma
Examination	Transilluminate, low threshold for further imaging
Surgery	High rate of postoperative wound complications. May have intradural communication
Recurrence	Risk of recurrence after excision
Rugby	May preclude return to rugby in the same playing position
Natural history	Do not completely resolve with cessation of rugby

when driving. Preoperative imaging included magnetic resonance imaging, computed tomography, and ultrasound. Two thirds were lipomas, and one third were fibromatous. Six patients (66%) suffered postoperative complications including recurrence (three), wound dehiscence (two), and infection (one).

Only one player returned to rugby after surgery, having changed position to tight head. No player reported resolution of the mass after cessation of rugby, but two noted a slight reduction in size with weight loss. No player reported receiving specific scrummaging coaching.

DISCUSSION

The pathogenesis of the above described neck lumps appears to be repeated trauma related to the specific demands on the loose head prop at the scrum. At the set piece, it is incumbent on this player to push upwards against his opposite tight head prop to force him upright in the scrum and prevent him from both pushing and acting as a conduit for the forces applied by the second row and number eight. This is performed by placing the head and neck against the sternum of the tight head and levering upwards, with the spinous process of the seventh cervical vertebra, being the most prominent bony protuberance, acting as a fulcrum through which forces act. The tight head prop in his turn resists upwards pressure by forcing the loose head downwards and backwards, again with the forces maximal at the fulcrum point. This results in concentration of shearing forces at the tissues overlying the vertebra prominens.

There are an average of 30 scrummages per game of rugby union,² and repeated trauma results in local inflammation overlying the vertebra prominens. This is particularly noticeable early in the season and may be exacerbated by the friction of rugby shirt collars over the area. The response of cells to increased demand or stimulation is either hypertrophy or hyperplasia with, at a cellular level, alteration of protein synthesis, including growth factors and growth factor receptors,³ resulting in an increase in size or number of cells respectively. Trauma has been previously associated with

lipoma development, this association being related to shearing forces, prolonged bruising, and inflammation resulting in local changes in oestradiol and leptin activity.⁴ No such mechanism has been suggested for fibrous hyperplasia.

The fact that not all loose head props develop such masses and the time scale over which they develop indicates that other factors must be involved other than position, including individual susceptibility, scrummaging technique, protective or deleterious effects of shirt type, and ability of opposing tight head prop. Taller loose heads playing against smaller tight heads would be forced to adopt flexed positions at the cervical vertebrae in order to achieve a mechanically advantageous scrummaging position and by so doing increase their susceptibility to the forces that result in development of the neck callosities. This study revealed an above average height of those props affected, but does not serve to confirm this association. Similarly it is not clear whether preventive measures are appropriate, such as improved coaching, collar padding, or scrum caps to offload the vertebra prominens.

For those involved in the medical care of rugby players, there are a number of key management points raised which should be highlighted (table 1). It is imperative that the correct diagnosis (lipoma or fibroma) be made in order to guide surgery, as fibrous masses attached to the skin or without clear surgical planes necessitate greater skin excision and thus potential difficulties with wound closure. Clinical signs may be ambiguous, as shown by the case presented, and should be supplemented with both transillumination in the clinic and more detailed imaging. This will serve to confirm the diagnosis as well as to plan the surgery, acting as it does to confirm the presence or absence of extradural extension.⁵ The high rate of postoperative complications should also be stressed to both clinicians and patients, and the possibility of not returning to rugby subsequently may help to guide the timing of any operation.

CONCLUSION

Clinicians caring for rugby players should be aware of the existence of these neck lumps and of the potential diagnoses. This should guide their examination and investigations, as well as raising awareness of the associated implications for management and future playing career.

Competing interests: none declared

The patient has consented to the publication of figures 1 and 2.

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What is already known on this topic

- Although well recognised in rugby circles, these neck masses have not to my knowledge been previously described in the medical literature

What this study adds

- A study of epidemiology and aetiology of neck masses in rugby players is described
- Proposals for clinicians on imaging and surgical management are outlined

COMMENTARY

This paper identifies a very specific condition in certain rugby players. The paper could be strengthened with more epidemiology, particularly with reference to prop forwards. The author may later investigate why players in the hooker position are not affected by this condition. The paper offers a unique approach to data collection, with the use of media, and gives some detail on the biomechanics of scrummaging. The area that needs to be strengthened from a clinical perspective is the rationale for investigations and management. I believe that the author is in a position to offer a "management flow chart" in view of the specific nature of this condition.

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COMMENTARY

This is an interesting paper which brings to the attention of the wider sporting and surgical fraternity a problem well known in rugby circles. A case report of troublesome neck lumps is linked with a survey. Although no firm conclusions should be drawn from this survey (being self selected) about

prevalence and natural history, some important features are highlighted. These should sound a note of caution for surgeons who may be considering intervention.

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COMMENTARY

This article highlights a condition in rugby players that may not be well known outside the rugby community. The author used an ingenious way to collect more information from similarly affected athletes by using media resources used by the rugby community. He has provided a valuable service by describing his experience with a patient and the experience of other affected athletes. This will undoubtedly help future patients and doctors in their diagnoses and management of this previously unstudied condition in rugby players.

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